REMARKS

Claims 1-35 are pending in the present patent application. Claims 24, 28-30, 34, and 35 stand rejected; and claims 25-27 and 31-33 stand objected to. Claims 1-23 have been withdrawn from consideration. By this amendment, claims 24, 25, 30, and 31 have been amended, and claims 1-23 have been canceled.

The Examiner has requested that Applicant cancels claims 1-23. In accordance with the Examiner's request, Applicant hereby cancels claims 1-23 without prejudice or disclaimer, and reserves the right to pursue claims 1-23 in a divisional application.

The Examiner has objected to claims 25-27 and 31-33 as being dependent upon a rejected base claim, but has indicated that claims 25-27 and 31-33 contain allowable subject matter, and would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant thanks the Examiner for the indication of allowability regarding claims 25-27 and 31-33.

Applicant has amended claims 25 and 31 from which claims 26, 27 and 32, 33 respectively depend, and accordingly believes claims 25-27 and 31-33 to be in condition for allowance. Applicant thus respectfully requests that the objection to claims 25-27 and 31-33 be withdrawn.

Claims 24 and 30 were rejected as being anticipated by Chang, U.S. Patent No. 5,598,110 (hereinafter, Chang). Applicant respectfully requests reconsideration of the rejection of claims 24 and 30 in view of the following.

Chang is directed to circuits incorporating tri-state logic elements (col. 1, lines 7-8). Chang discloses that a logic state detector provides three possible combinations of levels at

first and second output terminals Y_1 and Y_2 sufficient to distinguish the two possible defined states and a floating state at terminal Y (col. 3, lines 1-4, Fig. 4).

Applicant believes that claims 24 and 30 patentably define Applicant's invention over Chang, for at least the reasons set forth below.

Amended claim 24 is directed to a supply item comprising a circuit including a tri-state input port, said supply item associated with an imaging apparatus, and said supply item having at least three modes of operation, wherein a particular mode of operation of said at least three modes of operation is selected based on a signal level of a tri-state input signal supplied to said tri-state input port.

Chang does not disclose, teach, or suggest a supply item associated with an imaging apparatus, the supply item having at least three modes of operation. Rather, the asserted Chang supply item is a circuit, which Chang does not disclose, teach, or suggest being a supply item within the context of Applicant's claimed invention, much less a supply item associated with an imaging apparatus, as recited in amended claim 24.

Accordingly, Chang does not disclose, teach, or suggest the subject matter of claim 24.

In view of the rejection of claims 28, 29, 34, and 35 as being unpatentable over Change in view of Tsuruoka, U.S. Patent No. 6,371,588 B1 (hereinafter, Tsuruoka), Applicant submits as follows.

As set forth below with respect to the rejection of claims 28, 29, 34, and 35, Tsuruoka does not disclose, teach, or suggest the supply item having at least three modes of operation, wherein a particular mode of operation of the at least three modes of operation is selected based on a signal level of a tri-state input signal supplied to the tri-state input port. Rather

than at least three modes of operation, Tsuruoka discloses that three states, e.g., amounts, of registration shift (error) may be corrected. The correction of three different amounts of registration error does not disclose, teach, or suggest a supply item having at least three modes of operation.

Accordingly, Chang and Tsuruoka, taken alone or in combination, do not disclose, teach, or suggest the subject matter of claim 24.

Claim 24 is thus believed allowable in its present amended form.

Claim 30 is directed to an imaging apparatus. As amended, claim 30 recites, in part, a supply item for use in said imaging apparatus including a circuit having a tri-state input port coupled to said controller, said supply item having at least three modes of operation, wherein a particular mode of operation of said at least three modes of operation is selected based on a signal level of a tri-state input signal supplied to said tri-state input port by said controller.

In contrast to a supply item for use in said imaging apparatus including a circuit having a tri-state input port coupled to a controller, the supply item having at least three modes of operation, the asserted Chang supply item is a circuit, which Chang does not disclose, teach, or suggest being a supply item, much less a supply item for use in an imaging apparatus.

Accordingly, Chang does not disclose, teach, or suggest the subject matter of claim 30.

In addition, rather than a supply item having at least three modes of operation, Tsuruoka discloses that three states, e.g., amounts, of registration shift (error) may be corrected. The correction of three different amounts of registration error does not disclose, teach, or suggest a supply item having at least three modes of operation.

Accordingly, Chang and Tsuruoka, taken alone or in combination, do not disclose, teach, or suggest the subject matter of claim 30.

Accordingly, for at least the reasons set forth above, Applicant submits that Chang and Tsuruoka, taken alone or in combination, do not disclose, teach, or suggest the subject matter of claims 24 and 30, and thus respectfully request that the rejection of claims 24 and 30 be withdrawn.

Claims 28, 29, 34, and 35 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chang in view of Tsuruoka. Applicant respectfully requests reconsideration of the rejection of claims 28, 29, 34, and 35 in view of the following.

Tsuruoka is directed to a printhead which performs printing in accordance with an ink-jet method and a printing apparatus using the printhead (col. 1, lines 7-9).

As background, Tsuruoka discloses that the most important problem is how precisely dots of respective colors of ink are overlaid on a print medium, and that it is difficult to perform such registration adjustment, which often requires a user to judge the amount of registration shift by visual measurement and to then adjust the registration (col. 1, lines 21-36). Tsuruoka discloses that in accordance with the Tsuruoka invention, registration adjustment can be performed with a value equal to or less than the printing resolution in the scanning direction (col. 3, lines 6-10).

Tsuruoka discloses a carriage HC that has an ink-jet cartridge IJC having an integral printhead IJH and ink tank IH (col. 4, lines 21-22). In order to perform registration correction, Tsuruoka discloses fuses 108 that are used for setting the amount of registration shift (col. 6, lines 43-48). The registration shift amounts between two nozzle arrays are measured in

advance at a printhead manufacturing process, and in accordance with the measured values, values represented by 2 bits are set by cutting the fuses 108 by laser trimming (col. 1, lines 51-55).

The Tsuruoka method for correcting the registration uses a 2→4 decoder 110 and tristate buffers 111-1 to 111-3 and 112-1 to 112-3 to perform registration adjustment based on the states of the fuses in order to effect registration shifts of 0, ±¼, and ±½ dot pitch (col. 7, lines 15-60).

Applicant believes that claims 28, 29, 34, and 35 patentably define Applicant's invention over Chang and Tsuruoka, taken alone or in combination, for at least the reasons set forth below.

Claim 28 is directed to the supply item of claim 24, wherein said circuit is formed on a printhead attached to said supply item.

Chang does not disclose, teach, or suggest wherein the circuit is formed on a printhead attached to the supply item, nor does the Examiner assert as much. Rather, the Examiner relies on Tsuruoka as assertedly disclosing the subject matter of claim 28.

In contrast to the circuit being formed on a printhead attached to the supply item, as recited in claim 28, wherein the supply item has at least three modes of operation, and wherein a particular mode of operation of said at least three modes of operation is selected based on a signal level of a tri-state input signal supplied to said tri-state input port, as recited in claim 24, from which claim 28 depends, Tsuruoka discloses performing registration adjustment with a value equal to or less than the printing resolution in the scanning direction (col. 3, lines 6-10).

In order to perform the registration correction for printhead IJH, Tsuruoka discloses fuses 108 that are used for setting the amount of registration shift (col. 6, lines 43-48), and are cut by laser trimming at the factory based on measurements taken during manufacturing (col. 1, lines 51-55).

The Tsuruoka method for correcting the registration uses a 2→4 decoder 110 and tristate buffers 111-1 to 111-3 and 112-1 to 112-3 to perform registration adjustment based on the states of the fuses [cut or not cut by laser trimming during manufacturing] in order to effect registration shifts of 0, ±¼, and ±½ dot pitch (col. 7, lines 15-60).

Thus, Tsuruoka discloses that three different levels of registration shift adjustment, 0, ±¼, and ±½ dot pitch, may be performed in order to provide registration correction. Tsuruoka simply does not disclose, teach, or suggest that the registration shift amounts may be varied or changed after manufacturing or during operation of the printhead, but rather, discloses that the adjustments are based on the states of fuses, which are clearly set by being cut or not cut during manufacturing.

A registration correction by using one of three amounts of registration shift based on a state of fuses that are cut or not cut at the factory to yield the state, which hence are not changed, and are thus permanent, as disclosed by Tsuruoka, does not disclose, teach, or suggest at least three modes of operation of the printhead within the context of Applicants' claimed invention, since the Tsuruoka printhead will only operate with one amount of registration shift.

In addition, the Tsuruoka disclosure does not purport that the Tsuruoka registration adjustments pertain to modes of operation. Even if changeable, which Tsuruoka does not

disclose, teach, or suggest, the Tsuruoka registration adjustments are clearly for error correction, and do not pertain to modes of operation within the context of Applicant's claimed invention.

Modes of operation within the context of Applicant's invention pertain to, for example, a 300 dpi print mode or a 600 dpi print mode (see Applicant's specification from page 8, line 29 to page 9, line 5).

Accordingly, the registration shift correction disclosed by Tsuruoka simply does not disclose, teach, or suggest at least three modes of operation within the context of Applicant's claimed invention.

Accordingly, for at least the reasons set forth above, Applicants respectfully submit that the cited references, Chang and Tsuruoka, taken alone or in combination, do not disclose, teach, or suggest the subject matter of claim 28.

In addition, claim 28 is believed allowable due to its dependence on otherwise allowable base claim 24.

Claim 28 is thus believed allowable in its present form.

Claim 29 is directed to supply item of claim 24, wherein said circuit is formed on a printhead attached to said supply item.

Claim 29 is believed allowable in its present form for substantially the same reasons as set forth above with respect to claim 28.

Claim 34 is directed to the imaging apparatus of claim 30, wherein said supply item is a printhead cartridge.

Chang does not disclose, teach, or suggest wherein the supply item is a printhead cartridge, nor does the Examiner assert as much. Rather, the Examiner relies on Tsuruoka as assertedly disclosing the subject matter of claim 34.

In contrast to wherein the supply item is a printhead cartridge, as recited in claim 34, wherein the supply item is a supply item for use in the imaging apparatus including a circuit having a tri-state input port coupled to the controller, the supply item having at least three modes of operation, wherein a particular mode of operation of the at least three modes of operation is selected based on a signal level of a tri-state input signal supplied to the tri-state input port by the controller, as recited in claim 30, from which claim 34 depends, Tsuruoka discloses performing registration adjustment with a value equal to or less than the printing resolution in the scanning direction (col. 3, lines 6-10).

In order to perform the registration correction for printhead IJH, Tsuruoka discloses fuses 108 that are used for setting the amount of registration shift (col. 6, lines 43-48), and are cut by laser trimming at the factory based on measurements taken during manufacturing (col. 1, lines 51-55).

The Tsuruoka method for correcting the registration uses a 2→4 decoder 110 and tristate buffers 111-1 to 111-3 and 112-1 to 112-3 to perform registration adjustment based on the states of the fuses [cut or not cut by laser trimming during manufacturing] in order to effect registration shifts of 0, ±¼, and ±½ dot pitch (col. 7, lines 15-60).

Thus, Tsuruoka discloses that three different levels of registration shift adjustment, 0, ±¼, and ±½ dot pitch, may be performed in order to provide registration correction. Tsuruoka simply does not disclose, teach, or suggest that the registration shift amounts may be varied or

changed after manufacturing or during operation of the printhead, but rather, discloses that the adjustments are based on the states of fuses, which are clearly set by being cut or not cut during manufacturing.

A registration correction by using one of three amounts of registration shift based on a state of fuses that are cut or not cut at the factory to yield the state, which hence are not changed, and are thus permanent, as disclosed by Tsuruoka, does not disclose, teach, or suggest at least three modes of operation of the printhead within the context of Applicants' claimed invention, since the Tsuruoka printhead will only operate with one amount of registration shift.

In addition, the Tsuruoka disclosure does not purport that the Tsuruoka registration adjustments pertain to modes of operation. Even if changeable, which Tsuruoka does not disclose, teach, or suggest, the Tsuruoka registration adjustments are clearly for error correction, and do not pertain to modes of operation within the context of Applicant's claimed invention.

Modes of operation within the context of Applicant's invention pertain to, for example, a 300 dpi print mode or a 600 dpi print mode (see Applicant's specification from page 8, line 29 to page 9, line 5).

Accordingly, for at least the reasons set forth above, Applicants respectfully submit that the cited references, Chang and Tsuruoka, taken alone or in combination, do not disclose, teach, or suggest the subject matter of claim 34.

In addition, claim 34 is believed allowable due to its dependence on otherwise allowable base claim 30.

Claim 34 is thus believed allowable in its present form.

Claim 35 is directed to the imaging apparatus of claim 30, wherein said circuit is formed on a printhead attached to said supply item.

Claim 35 is believed allowable in its present form for substantially the same reasons as set forth above with respect to claim 34.

Accordingly, for at least the reasons set forth above, Applicant submits that Chang and Tsuruoka, taken alone or in combination, do not disclose, teach, or suggest the subject matter of claims 28, 29, 34, and 35, and thus respectfully request that the rejection of claims 28, 29, 34, and 35 under 35 USC §103(a) be withdrawn.

For the foregoing reasons, Applicant submits that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicant respectfully requests withdrawal of all rejections and allowance of the claims.

In the event Applicant has overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicant hereby conditionally petitions therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (317) 894-0801.

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